sanction of such eminent urological surgeons as Belfield, Fuller, Freyer, Young, and Harris of Sidney.

RENAL SURGERY

Renal surgery, as we know it, is but sixty-five years old. Before that time, incising the kidney consisted in opening a swelling in the kidney region. The first four nephrectomies were fatal. Gustave Simon of Heidelberg (1869) was the first successful nephrectomist. Simon was bold, and no doubt deaf, for he examined the unanesthetized patient by inserting his hand and forearm through the anal sphincter until he could feel the kidney. He dilated the female urethra with his finger, and guided the first ureteral catheter into place. These finger operations caused many deaths, for Lister's theory of asepsis and antisepsis, although introduced, was not yet taken seriously by the guild.

Since that time, tremendous progress has been made. The cystoscope with its functional and visual adjuncts; intravenous therapy and diagnosis; laboratory methods of diagnosis—all have helped to revolutionize procedure in renal surgery. Now, thanks to these supplementary aids, we operate with a minimum of risk to the patient, and with no fear regarding the outcome.

Despite great improvement in urological surgery, our methods are not yet perfect. Excellent though they are, some of them will be modified; others discarded; and yet newer ones developed and perfected. Our obligation to our patients and to our own profession is to do the best we can with the best we have, and to continue to search for something better. Only thus is continual progress in urological surgery assured.

1127 Eleventh Street.

ACUTE SURGICAL ABDOMEN*

REPORT ON OPERATIONS IN THE SAN FRANCISCO EMERGENCY HOSPITAL DURING THE LAST TEN YEARS

By EDMUND BUTLER, M. D. San Francisco

DISCUSSION by Thomas O. Burger, M.D., San Diego; Charles T. Sturgeon, M.D., Los Angeles; Robertson Ward, M.D., San Francisco.

NE thousand eight hundred and two patients suffering from acute surgical conditions of the abdomen have been operated upon in my service in the San Francisco City and County Hospital during the last ten years.

The operations were on patients as follows: 997 patients with acute appendicitis; 154 with hernias, incarcerated or strangulated; 57 with acute cholecystitis; 79 with ectopic pregnancies; 138 with gunshot wounds and stab wounds of the abdomen; 122 with perforated peptic ulcers; 135 patients with bowel obstruction; 100 with multiple interabdominal injuries; 5 with rupture of spleen; 4 with rupture of kidney; 10 with rupture of urinary bladder; and 1 with rupture of stomach.

APPENDICITIS

Because more than one-half of the patients had appendicitis, a discussion of that particular affliction seems fitting. It is not my desire to appear to instruct regarding appendicitis and the complications, but to simply comment on some of our observations.

In the way of surgical treatment, there are many types of technique, many forms of incisions and many methods of drainage, all having their advocates. The multiplicity of method, however, is seemingly most confusing to those without great experience or training. Possibly more than half of the patients with acute appendicitis recover without even calling a physician. Of the other half a varying percentage develop complications. These complications often prove extremely serious and account for the high post-operative mortality.

The inflamed portion of the appendix may be in any part of the abdomen and it may perforate without causing any signs or symptoms of a local nature. In this group are many of our fatal cases. The axiom "Cramps followed by vomiting is appendicitis until it can be proven otherwise," is a reasonable and a safe guide. I am confident that a high percentage of the conditions treated as food poisoning or acute indigestion are appendicitis.

Is it ever justifiable to delay operation? In general the diagnosis of appendicitis should be followed by immediate appendectomy; nevertheless there are instances where delay increases the number of recoveries. One, where the peritonitis is localizing and the patient is improving, and two, when the patient is seen late, giving a history of a stormy generalized peritonitis, it is rational to delay, hoping for localization, later draining the abscesses if any develop. Doctor Stillman, my former chief, often said: "Operate when the rigidity exceeds the distention; do not operate when the distention exceeds the rigidity.' In other words, in the patient who is dehydrated, extremely toxic, with greatly distended abdomen, and with pulse rapid and week, operation should be delayed and Ochsner's treatment for peritonitis instituted. Delay early in appendicitis is disastrous; delay late in appendicitis is often justifiable and life-saving.

DRAINAGE

As a rule general peritonitis does not require drainage. Localized abscesses do require drainage. It is well to allow plenty of time for localization and not to intervene before actual abscess formation has taken place. Every mass is not an abscess, and many a localized induration goes on to resolution and absorption. Abscesses that may be palpated through the rectum or through the vagina should be opened through that route, always catheterizing the patient first. In abdominal abscesses that require opening, one or two Penrose cigarette drains the size of the finger are sufficient for drainage. An abscess in the R. L. Q. is best drained through a muscle-splitting incision located slightly to the right of the most superficial point. In placing drains it is well to put the omentum around the drain to prevent the bowel

^{*} Read before the General Surgery Section of the California Medical Association at the sixtieth annual session, San Francisco, April 27-30, 1931.

from coming in direct contact with the drain. Fewer postoperative obstructions will occur if this procedure is carried out. When opening an abscess, the appendix should not be searched for unless it is easily located. It is folly to separate adhesions blindly and tear through edematous structures, contaminating the retroperitoneal cellular spaces and often damaging the bowel. The most dependent portion of the abscess should be explored with the finger for the presence of fecal concretions.

ANESTHESIA

The form of anesthesia is important. Well localized abdominal abscesses coming in contact or near contact with the anterior abdominal wall may be opened and drained under local analgesia. Large pelvic abscesses may be opened through the rectum without any anesthesia, or at the most, a few inhalations of gas and oxygen or ethyl chlorid.

Under spinal anesthesia relaxation is complete and the removal of a very adherent inflamed appendix may be done with the minimum injury to abdominal wall and bowel. Spinal anesthesia, I feel, should be limited to persons without any arterial disease, and is particularly dangerous in coronary sclerosis or sclerosis of the cerebral arteries.

Nitrous oxid and oxygen, reinforced by ether vapor, is very satisfactory in the hands of the expert anesthetist. Ether I still believe to be the safest anesthetic we have; particularly is this true when those administering the anesthetic are not among that small group of expert physician anesthetists.

POSTOPERATIVE TREATMENT OF PERITONITIS AND ABDOMINAL ABSCESS

The postoperative treatment of peritonitis and abdominal abscess is carried out as follows:

- 1. The patient is placed in the position in which the abscess is dependent. The Fowler position is preferred for pelvic abscess. Shoulders should be slightly elevated and the pelvis raised slightly on the left for right iliac region abscesses.
- 2. Generally patients do not receive enough fluids. At least 4000 cubic centimeters of salt and glucose solution should be given subcutaneously, intramuscularly or rectally, by the Weeks method daily, until patient is able to retain and absorb liquids by mouth. There is never any excuse for neglecting to give salt solution subcutaneously or intramuscularly.
- 3. The stomach must be kept empty if patients are nauseated or vomiting. Normal peristalsis will not be instituted if the stomach is dilated. At times patients are too weak and toxic to vomit, so that the stomach dilates, fills and runs over. This condition always calls for lavage. If the patient continues to regurgitate gas and feels nauseated, the stomach should be lavaged. The use of a duodenal tube has actually saved many patients with acute dilatation and general peritonitis. I feel safe in making the statement, "If you are in doubt as to the condition of the stomach, pass the duodenal tube." The duodenal tube

is left in position until the character of drainage changed from that of the small bowel content to that of the stomach content.

- 4. Morphin sulphate or some other efficacious sedative is given in sufficient quantity to give comfort
- 5. Moist heat to abdomen is very essential if peritonitis is absent or peristalsis is delayed.
- 6. Food must not be given by mouth until there is sufficient peristalsis to move it out of the stomach and along the intestinal tract. A patient may be sustained ten to twenty days by intravenous glucose and subcutaneous salt solution. Oral feeding is instituted too early in most postoperative patients.
- 7. It is a reliable rule never to give solid food until peristalsis is active and patient is passing gas without the aid of a rectal tube.
- 8. Laxatives actually do a great deal of harm if given early. A patient convalescing favorably is sometimes doomed by a large enema. Irrigation of the rectum and lower colon through a rectal tube is all that is required until the gut has resumed normal tone.

Many are the complications that may occur during convalescence from the fatal cases of pylephlebitis, liver abscess, and extensive retroperitoneal cellulitis down to the slightest degree of localized peritonitis and of wound infection. In all of the complications due to the spread of infection, it is a wise rule to be very slow to explore.

The distention due to peritonitis is general, and is best treated by treating the peritonitis, only doing a jejunostomy or iliostomy when all other methods of relief have failed.

In the mechanical obstruction it is well to do an enterostomy as near the obstruction as is practical or, at the most, a short circuit of the region of the obstruction. I am referring to the patients having many adhesions in the region of the cecum. Extensive separation of adhesions usually is followed by rapidly spreading peritonitis and death. Occasionally a segment of bowel is dilated, the muscle paralyzed and acts as a complete block. An enterostomy proximal to the paralyzed loop relieves the obstruction and allow the distended loop rest and time to recover its tone.

490 Post Street.

DISCUSSION

THOMAS O. BURGER, M. D. (1301 Medico-Dental Building, San Diego).—Doctor Butler's subject, "The Acute Surgical Abdomen," most efficiently serves to bring to our attention again the disease appendicitis, which in spite of refinements in surgical skill and advancement in knowledge still finds its mortality on the increase.

Heretofore the physician or general practitioner who has been most frequently called in attendance has received most of the credit for this increase in mortality rate, whereas the so-called surgeon, through lack of judgment and faulty methods, has not been rightfully considered.

Although much has been said concerning this subject in the past, it is true that no important condition has received less discussion at our medical meetings in the past few years than that of appendicitis. If there is any hope of decreasing the mortality rate, it must result from our own efforts through education of the laity, more frequent discussion, and a better coöperation between the physician and surgeon.

In considering the presence of appendicitis it is well to bear in mind the so-called protected appendix, either the retrocecal or the one well surrounded by omentum. Here the usual findings may be masked or absent. There may be less than the usual pain, no rigidity, and only slight tenderness may be elicited. In this instance the leukocyte count will most frequently be the deciding factor, together with the clinical history. Although I have been impressed with the occasional finding of a nondetermining leukocyte count in advanced cases of appendicitis, yet for this understanding our diagnostic acumen should not in all instances be too dependent on the blood count.

We must also keep in mind those diseases arising outside of the abdominal cavity which may express themselves in abdominal pain or distress. I am sure that many of us have at some time seen abdominal pain, particularly from lung or cardiac disease, simulate clinically, many different types of acute abdominal crises. Diseases of the genito-urinary and nervous systems are also frequently to be considered as extraperitoneal factors in the production of abdominal pain.

I would like to emphasize here the importance in making an exact diagnosis, if possible, in an acute surgical abdomen. We should not be satisfied with the mere diagnosis of a surgical condition, only to find on entering the abdomen, much to our chagrin and embarrassment, that we are mistaken, with possibly very serious consequences to the patient.

The high perfection of anesthesia in modern surgery has, within the past few years, contributed very much in lowering the mortality and morbidity rate in abdominal conditions. No little consideration should be given to spinal anesthesia which, in my opinion, is the "life saver" in many surgical conditions of the abdomen. I am impressed with its resultant complete relaxation and more perfect work, less damage to contents of the abdomen afterward, and freedom from pain and untoward effect on the patient. This, after all, meets the requirements of a perfect anesthesia, at least in reference to the abdominal cavity.

I do not consider all cases of arterial disease a contraindication, but arteriosclerosis, very high tension, are doubtful cases on which to use spinal anesthesia. More recently in those abdominal conditions, particularly the lower abdomen requiring drainage of pus, I feel hesitant in its use where Fowler's position is preferred immediately after operation. During the past eighteen months 80 per cent of our abdominal operations have been carried out completely under spinal anesthesia, using novocain 100 milligrams, not exceeding 150 milligrams, with the preliminary injection of ephedrin, sodium amytol, and a particularly good-sized dose of morphin as an adjunct.

I am not in favor of its indiscriminate use for every abdominal operation; and again there are those few patients whom we must admit are not psychically adaptable.

The essayist has very well brought to our attention many important observations concerning the treatment of abdominal conditions, and their use is very highly recommended.

CHARLES T. STURGEON, M. D. (1930 Wilshire Boulevard, Los Angeles).—Our experience in the emergency service at the Los Angeles General Hospital coincides very closely with that of Doctor Butler's.

Appendicitis furnishes practically 60 per cent of the acute surgical conditions of the abdomen, and of this number approximately 40 per cent have developed some type of complications such as peritonitis, rupture, and abscess.

There are several reasons why so many cases of appendicitis are allowed to go on and develop complications, and without a doubt the doctor is not entirely responsible for this condition. Practically all patients seen by the doctor have received cathartics or enemas; some have been treated in this manner for several days. When seen, the condition is not typical of appendicitis and unfortunately too many men adopt a policy of waiting, which, of course, in early appendicitis is a very bad procedure.

The question of when to operate in acute appendicitis is before the development of complications. All patients in whom a diagnosis of acute appendicitis is made should be looked upon as patients needing emergency surgical intervention. While it is true that a large number of patients with acute appendicitis get well without surgery, there are at present no criteria by which one can base such a prognosis.

The mortality of operations for acute appendicitis before the advent of peritonitis is not high. It is not this type of case that can be blamed for the increasing mortality; it is the case in which complications have occurred, such as localized abscess, peritonitis, or obstruction of the bowel. When to operate after peritonitis has developed, depends on the type of peritonitis and the condition of the patient. In all cases of local peritonitis, operation can be safely done at once with the proper technique.

In cases of localized peritonitis with abscess, the condition is surgical but is not an emergency. Time can be taken to improve the patient's general condition.

In cases of spreading peritonitis or general peritonitis, surgery is not indicated. Treatment should be directed to the peritonitis, such as the Fowler position, heat to the abdomen, fluids, gastric lavage, and constant watching in case the patient develops a localized abscess, which should be drained as soon as diagnosed.

I agree with Doctor Butler in his statement that the appendix should be removed only in those cases where little damage is done in searching for the appendix. Patients who have only drainage should be told that it will be necessary to remove the appendix at a later date, as this type of case is prone to have recurrent attacks.

We have discontinued doing an enterostomy in peritonitis because of its high mortality and the little amount of drainage which took place. In its place we now use the Levin tube, which is passed through the nose and kept in until the patient has improved sufficiently to take fluids by mouth. In this way the stomach can be kept absolutely empty and the patient can be given large amounts of fluids which act as a gastric lavage. The only time that we now use an enterostomy is in cases of intestinal obstruction following an acute appendicitis and occasionally in a case of paralytic ileus when all other means have failed to relieve the patient. I must admit that in only a very few cases has it proved of any benefit.

We have used spinal anesthesia in practically all of these operations.

Doctor Butler has covered the subject of acute appendicitis so well that there is very little left to discuss or elaborate on. Doctor Butler should be thanked for again calling our attention to a condition which is responsible for so many of our emergency abdominal operations.

Robertson Ward, M. D. (384 Post Street, San Francisco).—I sincerely hope that Doctor Butler may be able to report at a later date the "cathartic history" of those patients who developed complications with acute appendicitis. In this way I am sure he could point out that the 50 per cent of patients who recover from appendicitis without calling a physician are those who recover without physic. However, from the point of view of the surgeon, the problem is presented in its entirety when the patient comes under his care. It is in this situation that Doctor Butler's lesson of the relation of rigidity to distention may be used to good advantage. My personal experience has led me to the conclusion that appendicitis should be operated upon as soon as diagnosed except in the one instance which he cites, namely, when distention exceeds rigidity.

In the treatment of peritonitis I would be even more emphatic than Doctor Butler in warning against the use of drains. In the presence of general infection it is physically and physiologically impossible to drain the peritoneal cavity, and foreign material can only increase the density and permanence of post-

operative adhesions. The abdominal wall and localized abscesses of the peritoneal cavity should be drained, as he suggests, with small Penrose strips.

The essayist has done well to remind us that the best surgery is the least that can be done to eliminate continued reinfection of the peritoneal cavity. I agree with him that spinal anesthesia is a real boon to the surgeon, but in these days when its popularity is increasing so tremendously, it is well for its friends to warn against its use in those patients so ill that any anesthetic or surgical procedure is likely to lead to a fatal outcome. Spinal anesthesia cannot be asked to perform miracles of healing, and only disrepute can come from its use upon moribund or extremely weak patients with low blood pressure.

In the postoperative treatment of patients with acute abdominal conditions, it is gratifying to note the unanimity with which surgeons of experience lay emphasis upon the two all-important, life-saving elements, namely, a high normal saline solution intake and continuous gastric lavage. A parenteral administration of 4000 cubic centimeters a day should be insisted upon. The fluid should all have a normal salt content of chlorid, and whether dextrose should be added depends upon the duration of treatment and the patient's consequent need of carbohydrate. One thing to remember is that a patient's circulation can never be overloaded with solution given subcutaneously. The chlorid loss through vomiting or continuous gastric or duodenal lavage is always high, but the stomach and upper intestines must be kept empty if peristalsis is to be reëstablished. This can best be done, as Doctor Butler states, not by repeated and exhausting stomach washes with a large tube, but by an indwelling, transnasal Levin duodenal tube, to which continuous mild suction is applied. By use of this method it is no longer necessary to guess when peristalsis is reëstablished or when food administration can safely be started.

OPTIC NERVE CHANGES IN NONTRAUMATIC NEUROLOGIC DISORDERS*

REPORT OF CASES

By WALTER F. SCHALLER, M.D. San Francisco

DISCUSSION by Otto Barkan, M. D., San Francisco, Joseph L. McCool, M. D., San Francisco.

SCARCELY any neurological examination, apart from the peripheral nervous system, is complete without some idea of the state of the optic nerve. A proper neurological status includes examination of the vision, visual fields, appearance of the nerve head, and pupillary reactions. This has been a routine in private neuropsychiatric case records now numbering 4660. It has been of considerable personal interest and profit to review these case records, particularly in the light of incidence, diagnosis, and course. A paper of this character cannot of necessity be comprehensive, and I fear will be discursive, but it will at least represent the clinical experience of a neurologist over a twenty-year period. Papilledema, the Argyll Robertson phenomenon, optic neuritis and optic atrophy, and certain visual syndromes are considered.

PAPILLEDEMA

Papilledema, or choked disk, is characterized at the onset by vascular changes: contraction of

arteries, tortuosity and dilatation of veins, and projection of the papilla; this progresses to a state of edema of the disk and surrounding retina with hemorrhages and white streaks of irregular patchy degeneration in and about the disk. Important is the long retention of acuity of vision with periods of dimness of vision and transitory blindness, first emphasized by Jackson.

Since Albrecht v. Graefe (1860) published his work on papillary stasis over seventy years ago, this condition has been the subject of much research and discussion, resulting in four principal theories, namely, of venous stasis; transport theory of the optic sheath; extension of brain edema; and the optic nerve lymph stasis theory. Wildbrand and Saenger 1 (1909) in their system devote two hundred eighty-one pages to papillary stasis, thirty-one of which are devoted entirely to theoretic discussion. The discussion still continues, but the tendency in later years has appeared to favor either the optic sheath theory or the lymph stasis theory (C. Behr), the latter explaining cases with and without intracranial pressure. Claude, Lamarche, and Durbar 2 state that intracranial pressure is accompanied by arterial hypertension of the retinal vessels, which condition is established by precise determination. When the equilibrium thus established is disturbed by a lowering of the retinal arterial pressure, signs of papillary stasis occur. In three cases the authors have found this fall in retinal pressure to precede the ophthalmoscopic evidence of stasis, calling attention to this fact without offering a definite theory of its mechanism. Nevertheless they favor a reflex vasomotor explanation to the mechanical theory.

L. Dupuy-Dutemps 3 has been concerned with the subject of pathogenesis since his Paris thesis of 1900. He believes papilledema is due to a compression of the central vein of the optic nerve with consequent venous stasis. In conditions of intracranial pressure the compression is effected by transmitted pressure to the optic sheath, affecting the vein at the exit from the optic nerve, about one centimeter from the retina; but local conditions may affect the vein retro-orbitally in the optic nerve itself, and also produce papillary stasis. Tilney 4 describes a canal from the third ventricle and lined by ependyma which extends laterally over the optic chiasm and optic nerves. He names this the supra-optic canal. Distention of this canal, by lesions obstructing drainage, is advanced as a cause of papilledema. It is the condition of intracranial pressure which particularly concerns the neurologist, and for the presence or absence of which he seeks information from the eyeground examination; however, an appreciable intracranial pressure may exist, even reported as high as 400 to 500 millimeters of water, without accompanying papillary stasis.

REPORT OF A CASE

The following case of spontaneous subarachnoid bleeding is significant in indicating the degree of intracranial pressure at which one may expect eyeground changes.

^{*}Read before the Eye, Ear, Nose, and Throat Section of the California Medical Association at the sixtieth annual session at San Francisco, April 27-30, 1931.